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AUTHOR Kent, M. R.; Dockrill, F. J.
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ABSTRACT

Forty sub-literate adults were given reading and comprehension skill training. Twenty of the subjects were taught using a multimedia, multimodal and multilevel communication skill system (Experimental Group). The other twenty were taught in a traditional manner using standard reading texts (Control Group). Both Groups received an average of 265 hours of instruction. The Experimental Group showed a significantly greater gain in reading and comprehension skills than the Control Group. (Author/NF)

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TEACHING READING AND COMPREHENSION SKILLS TO SUB-LITERATE ADULTS

by

M. R. Kent
Department of Education
Province of Nova Scotia

and

F. J. Dockrill
School of Education
Saint Mary's University

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A B S T R A C T

Forty sub-literate adults were given reading and comprehension skill training. Twenty of the subjects were taught using a multimedia, multimodal and multilevel communication skill system (Experimental Group). The other twenty were taught in a traditional manner using standard reading texts (Control Group). Both Groups received an average of 265 hours of instruction. The Experimental Group showed a significantly greater gain in reading and comprehension skills than the Control Group.

INTRODUCTION

In order to develop an effective method of teaching basic reading and comprehension skills to the sub-literate Adults of Nova Scotia, experimental research was conducted on two equally matched classes of students referred for training by the Canada Manpower Centre. This research measured the gains in literacy achievement resulting from two different methods of lesson presentation over a prescribed period of time.

Bruno (1965) states that sub-literate adults may be classed under three broad groups, namely: (1) the illiterate, (2) functionally illiterate, and (3) non-English speaking.

He defines the illiterate as one who cannot read nor write. The functionally illiterates are those whose "functional level is so low that it is impossible to give them any kind of vocational training. On a standardized test, the functional illiterate usually would fall below the fifth year of school achievement (p. 10)". This experimental study deals with sub-literate adults, or those who fall in the range between illiterate and functionally illiterate.

Records of schooling received by individuals in Canada compiled by the Dominion Bureau of Statistics (1961), and surveys carried out by the Department of Manpower and Immigration (1970) dealing with persons seeking employment indicate an alarmingly high rate of adults who are considered as functionally illiterate by the present standards of society. In order that these adults may function effectively in the community and contribute to the economy of the country, the Government of Canada set out to educationally upgrade these people to a standard whereby they can enter employment or undertake occupational training of their choice.

Under a Federal-Provincial Training agreement signed in 1967, the Province of Nova Scotia was charged with the responsibility of devising the curriculum and methodology, and effectively upgrading selected adults in the areas of science, mathematics and communications. This study represents an attempt to legitimately select improved methods of teaching communication skills to these adults.

Studies investigating cross-modal transfer (e.g., Cole, Chorover, & Ettlinger, 1961; and Wallach & Averbach, 1954) seem to indicate that there is little or no transfer between modalities. If this is true, learning should be facilitated by increasing the number of modalities used in processing information. In teaching the complex skills used in reading and comprehension it would follow that a multi-modal approach should result in greater achievement than a standard teacher-text book approach.

Some studies undertaken to test this assumption (e.g., McKee, et al., 1967; and Scheier and Senter, 1969) have found that students using multi-modal equipment showed significantly greater gains in the achievement of reading and comprehension skills than those using a teacher-text book approach. The present study represents an additional attempt to determine the effectiveness of a multi-modal approach with functionally illiterate adults of Cape Breton Island who have been unemployed because of the phasing out of their old jobs or because of seasonal unemployment.

METHOD

In order to test the hypothesis that adult students instructed by a multi-modal method will manifest a significantly higher achievement in reading and comprehension skills than those taught by a teacher-text book method; the achievement of an experimental group of 20 adult students, taught by a multi-modal technique, was compared with a control group of equal size, taught by a conventional method. Research was confined to a sample drawn from the population of unemployed and unskilled male and female adults living on Cape Breton Island. The experimental group received instruction at the Adult Vocational Training Centre, Point Edward, Nova Scotia and the control group at a public high school in Dingwall, Nova Scotia. Perfect matching of the two groups was impossible because of the limited numbers referred for training. The groups were matched as closely as possible on the basis of IQ, last school grade completed, occupation, age, sex, and marital status as shown in Slides 1 and 2.

The experimental group used commercially produced material called Learning 100 or L-100 produced by Educational Development Laboratory a division of McGraw-Hill. The system and equipment is described in detail by Scheier (1969) and Frachenpohl and White (1968). There are five basic tools employed:

1. Tachitoscope or Tach-X. This device projects an image from a 35 mm. film strip of letters, symbols, words, or numbers on a screen. The image will be initially out of focus, will be brought into focus for a present duration, and will go out of focus. The duration of the period when the image is in focus may range from one and one-half seconds to five one-hundredths of a second. The Tach-X is designed to train people to attend to a written image.

2. Flash-X. This is a flat circular instrument about five inches in diameter which resembles a disc. It contains a spring-loaded shutter and a window. Into this instrument circular paper discs may be inserted each

DISTRIBUTION OF SUBJECTS BY IQ, GRADE, AND OCCUPATION

GROUP	NUMBER OF SUBJECTS	IQ				GRADE			OCCUPATION		
		-70	71-79	80-109	110+	-2	3-5	6+	FISHING	LABOUR	OTHERS
CONTROL	20	1	2	16	1	3	11	6	10	5	5
EXPERIMENTAL	20	1	4	15	0	2	13	5	4	10	6

Slide 1

DISTRIBUTION OF SUBJECTS BY AGE, SEX, AND MARITAL STATUS

GROUP	NUMBER OF SUBJECTS	AGE				SEX		MARITAL STATUS	
		-19	20-34	35-49	50+	M	F	MARRIED	SINGLE
CONTROL	20	2	6	9	3	18	2	14	6
EXPERIMENTAL	20	1	6	10	3	20	0	13	7

containing lines of words. By depressing the shutter level, the window is opened for a predetermined period thus exposing the word. By advancing the paper disc, a new word is placed into position which will be viewed when the shutter is depressed again. Flash-X is used by individual students as additional practice to the Tach-X for skill building in accuracy training, and "look and write the word" training.

3. Controlled Reader. This instrument is similar to a 35 mm. film strip projector. It has an additional motor that actuates a moving slot which scans the printed words on each line from left to right. At the end of the line, the next line is automatically advanced without projection on the screen. When in place, the scanning slot moves again from left to right uncovering words on this line.

The projector may be set to project from five to 25 letters on the screen from left to right at rates from 15 to 90 lines per minute. This instrument further extends the perceptual accuracy initiated by the Tach-X.

4. Aud-X. This instrument utilizes 35 mm. film strips in cartridges. They contain printed words and stories with a sound disc which may be either made audible to the entire class or heard by individual students through a system of outlets and earphones. The words presented on the screen are supported auditorily from the sound disc which is synchronized to the visual presentation thus combining the auditory and visual senses. This machine is used for the introduction of new sounds and concepts through drill and stories.

5. "GO" Books. These are specially prepared manuscripts which allow the student to undertake independent or directed reading on completion of the skill-building exercises. The stories are written in an adult setting using adult experiences.

The program is divided into seven levels, each level requiring ten sessions. The first level is a readiness level designed for non-readers. It

deals with basic auditory and visual discrimination skills, provides for the establishment of a basic sight vocabulary, and some word recognition. The next three levels are intended to strengthen the basic auditory and visual discrimination skills, build extensive sight vocabulary, deal with word attack skills, as well as build comprehension and study skills. The final three levels are intended to help the students enlarge their sight vocabulary, develop critical and appreciative reading, and develop advanced reading comprehension, listening, and study skills.

The two instructors involved in the experimental program received a ten day orientation course to familiarize themselves with the L-100 equipment and materials.

A normal day's schedule for the experimental group involved approximately two hours of training. The first five minutes of the session involved Tach-X training on symbols, numbers, letter exercises, motility training, or accelerated discrimination training. This is followed by fifteen minutes of instructor guided discussion with audiovisual presentations. Finally, there was a ninety minute skill building period.

Reading and comprehension skills were taught to the control group by an instructor on an individual and group basis using prescribed materials and daily newspapers. The prescribed reading material falls into five classifications:

1. Science Research Associates Reading Laboratory (Parker, 1960). These are multilevel laboratories designed to accomodate individual differences normally found in all students. Through the use of short stories, each laboratory's aim is to improve the student's performance in reading rate, comprehension, vocabulary, word attack skills, and the skills of listening. There are twelve laboratories in the series designed to accomodate students from

grade one through to grade twelve. Each laboratory contains color coded stories. The color indicates the degree of difficulty. All stories are of high interest to the adult thus they help to maintain motivation. The student corrects his own work and in this way he has immediate feedback on his progress.

2. Getting Started, On the Way, and Full Spead Ahead (Bauer, 1965). These books are designed to enable the adult student to acquire adequate communication skills as rapidly as possible with a minimum of outside assistance. Getting Started presents monosyllabic letter patterns, stresses spelling patterns as well as presents an attack on the derivation of new words from the words that the student already knows. The concepts of new words are reinforced with pictures of objects which they represent. The first book teaches both writing and block printing. The second book, On the Way, expands on the basic concepts learned in the first book. The third book, Full Speed Ahead, again builds on previous learnings with the use of spelling patterns, context as a cue to new words, and the ability to follow directions.

3. Systems for Success (Henney, 1965). These books are designed to give the student a working knowledge of the phonic system, spelling exercises, arithmetic, handwriting and sentence structure. The material is essentially adult in nature and contains practical exercises in the filling in of application forms and in letter writing.

4. Basic Goals in Spelling (Kotlmeyer, Ware & Purvis, 1965). This series uses illustrations, handwritten and printed words, puzzles, the use of the dictionary for pronunciation, and the word-in-context in a sentence to illustrate word usage. Homonyms, synonyms and antonyms are also introduced in this series.

5. Readers Digest Series. These books are designed to introduce and

reinforce basic reading skills for the functionally illiterate, drop outs, and poor readers. The stories are of high interest calibre, usually involving feats of courage and daring adventure. A set of these readers will provide reading material for grade levels one to ten. Each story has an overview, followed by the episode, word meaning, exercises showing the use of words in the sentences, and questions on comprehension.

A normal day's schedule for the control group involved approximately two hours of training. All students were at different stages of reading and comprehension ability and had to be grouped into smaller groups for various phases of the communication skills. Because of the uneven rate of progress by various students in their mastery of subskills, periodic regrouping was necessary thus enabling the instructor to present some new material to the entire class, get the most advanced group started on their assignments, and to circulate from group to group to assist them as required at their particular level. In addition to the standard teaching material used throughout the course, students who became advanced enough to read with any degree of fluency were encouraged to use the local newspaper for further reading and comprehension exercises.

RESULTS

The mean hours of attendance for both groups are shown in Slide 3.

The easy level of the Test of Adult Basic Education was administered to both groups prior to the beginning of the program and following its completion. The Test of Adult Basic Education has been adapted from the California Achievement Test by the California Test Bureau, a division of McGraw-Hill. Different forms of the test were used for the pretest and posttest.

The mean scores for each group for the pretest and posttest are shown in Slide 4. The mean scores are:

Pretest:	Experimental	53.10
	Control	55.15
Posttest:	Experimental	72.20
	Control	60.60
Difference:	Experimental	19.10
	Control	5.45

A t-test carried out on the pretest scores revealed no significant difference between the experimental and control group ($t = 1.302$, $df = 38$, $p > .20$). A mixed analysis of variance (Winer, 1962) on the overall scores revealed the following:

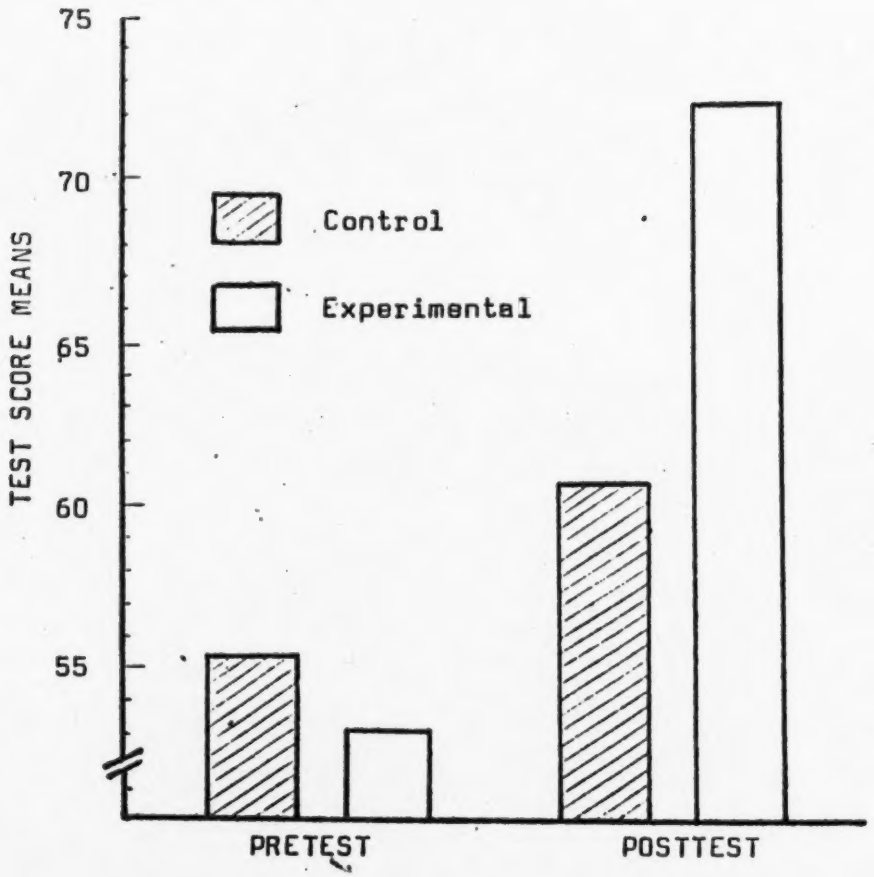
1. A significant tests effect ($F - 2\text{-}0.10$; df 1, 38; $p < .001$).

2. A significant tests X treatments interaction ($F - 61.86$; df 1, 38; $p < .001$). This indicates that both groups taken together showed a significant gain in reading and comprehension skills from the pretest to the posttest. This is not surprising as every member of both groups showed some gain following training. A t-test carried out on the posttest scores showed the experimental and control groups to be significantly different ($t = 1.901$, df 38, $p < .05$).

MEAN HOURS OF ATTENDANCE

GROUP	FIRST 100 HOURS	SECOND 100 HOURS	THIRD 100 HOURS	TOTAL
CONTROL	91	95	74	260
EXPERIMENTAL	~~20~~ 96	~~96~~ 93	76	265

Slide 3


75
70
65
60
55
TEST SCORE MEANS
Control
Experimental
PRETEST
POSTTEST

Slide 4

This combined with no difference in the pretest scores indicates that the significant tests X treatments interaction is due to a reliably greater gain in reading and comprehension skills in the experimental group than in the control group. These results clearly indicate that a multi-modal approach to teaching these communication skills to adults is more effective than the traditional teacher-text book method.

The following are a summary of observations compiled from the comments of the instructors and the contact of the research supervisor with the programs. The observations are grouped as they apply to the experimental, control, or both groups.

Experimental Group

1. Majority of the students were fascinated by the L-100 equipment, while some were timid and reluctant to operate the equipment for fear of breakage.

2. Logical sequencing of skill acquisition and the variety of instruments used to acquire these skills kept student interest at a very high level.

3. The 10 day orientation period for the instructors designed to teach them equipment handling skills is considered insufficient to give them confidence and flexibility necessary to deal with adults at such low level of literacy.

4. It was found that students were not able to advance through the levels in the time recommended by the manufacturer of the equipment.

5. It was found that the readiness level was too difficult for those who were totally illiterate; hence they had to be grouped into a prereadiness level using teacher made materials in phonics and writing.

6. L-100 program provided a closer instructor-student relation than did the teacher-centered program.

7. Program provided for individual differences in that each student could advance at his own pace.

8. A remedial room provided the opportunity for the slower student, or one who missed a class to catch up on material that he missed or did not understand.

9. Filmstrips were too flimsy and many mechanical failures occurred.

10. Students whose IQ was below 75 found considerable difficulty in remembering the work they covered the day before. Some had to repeat a cycle several times.

Control Group

1. Considerable difficulty was experienced in handling 20 sub-literate adult students in one classroom by one instructor. At times the group had to be subdivided into five or six smaller groups all working at various levels of the communications skills. Those whose reading and writing ability was the lowest, required constant attention from the instructor in order to make progress. While the instructor was engaged in assisting the lowest level group, other groups had difficulty progressing.

2. By using a variety of commercially prepared materials, the instructor was able to be more flexible and keep all groups satisfied and challenged, however, since the teaching material was developed by several publishers; there were times when the content and methodology of several systems used together was conflicting and not continuous.

3. Much of the commercially prepared material developed for the illiterates was considered too advanced.

4. Motivation in this group was high. It was found, however, that adult students would easily become restless and bored if they had to wait for an instructor to help them out, or if the same approach and material was used for a prolonged period of time.

Both Groups

1. Those who could read and write for the first time showed a tremendous pride in their achievement.

2. Students brought to class their concepts of justice, equality and values that in many cases were not in keeping with those commonly accepted in a normal society.

3. Personal problems requiring immediate attention had a retarding effect on their academic progress.

4. In many instances powerlessness, helplessness and social isolation tended to create attitudes of "live for today" with their chances of obtaining a job being a goal almost out of reach.

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